

## NASA Education Stakeholders' Summit

September 14, 2010

Day Two Wrap Up

- Day II provided great context and content on our theme of, **“Meeting National STEM Workforce Needs: Everyone’s Mission.”**
- Dr. Carl Person, Manager, Minority University Research and Education Project served as the facilitator for the plenary and introduced Dr. Woodrow Whitlow, Associate Administrator for Operations, who provided inspiring words on the importance of Education and how we must get students in the NASA pipeline and STEM workforce. He also stressed the importance of cultivating relationships and developing networks. He indicated that COOP and Career Intern opportunities could be found on NASAJOBS and USAJOBS starting in Fall 2010 and Spring 2011. He also discussed some of the benefits and professional development opportunities available at NASA. He indicated the “work we do” is a great recruiting tool in itself. He then introduced Dr. Cora Marrett, Acting Director, National Science Foundation (NSF), who served as the keynote speaker for the plenary session.
- Dr. Marrett provided dynamic and encouraging remarks, as she reiterated our theme, **“Meeting National STEM Education Needs: Everyone’s Mission.”** She asked the question – What is our Role?
- She provided a relevant analogy about the word “Mission” and how NASA even uses it in the titles of its directorates (i.e. Science Mission Directorate, Space Operations Mission Directorate, Aeronautics Research Mission Directorate, and Exploration Systems Mission Directorate).
- She stressed how many agencies do not actually do the work of STEM, but they too have a role. They have to find their role in the STEM nexus and we need to encourage them to take their place in the STEM landscape.
- NSF specifically provides a place for basic research and their mission in this realm focuses on fostering authentic experiences that mark the work of scientists, researchers, and engineers, as these kinds of opportunities for students and teachers are priceless.
- Dr. Marrett stressed the importance of diversity and indicated it is not the responsibility of Education alone, but requires participation across different levels.
- She discussed the National Science and Technology (NSTC) Subcommittee and how it brings together all Federal Agencies to discuss STEM. She further pointed out there are disconnects between many agencies and stressed that we cannot afford these separations, especially with the changes that are on the horizons.
- She concluded by reiterating, “The roles of the Agencies are only limited by our imagination.” She complimented the commitment of our student ambassadors now and in the future and said we must all think through our roles of collaboration.

### Panel Session

- Ann Heyward, Vice President, Ohio Aerospace Institute and Katie Wallace, Education Director, NASA Stennis Space Center served as facilitators for the Panel Session: **“Meeting National STEM Workforce Needs: Everyone’s Mission.”** Panelists were

Dr. Roosevelt Johnson, Fellow, American Association for the Advancement of Science and Executive on Loan from the National Science Foundation; D. Masoud Milani , Director of the Office of Student Access and Success, College of Engineering and Computing, Florida International University; Dr. Everett Roper, Associate Professor, Oakwood University; Dr. Ernestine Psalmonds, Senior Program Officer, The National Academies; Dr. Laurel Vermillion, President, Sitting Bull College; Dr. Bernard Batson, Director of Diversity and Outreach Programs, College of Engineering, University of South Florida; and Susan Lavrakas, Chair, Aerospace Industries Association Industrial Base & Workforce Committee and Director, BAE Systems.

- Recurring points and themes focused on: 1) Funding and its implications on policy and policy direction (i.e. available funds impact continuation or elimination of programs and projects); 2) Need to emphasize K12, since this is the foundation of our Education system. This is where we can capture their interests early and inspire/motivate them to choose STEM; 3) Systems are not automatically connected...we must work to connect the dots. (Sports analogy was particularly profound, whereas, if we stressed and supported STEM initiatives and activities as well as we supported sports activities, we could be in a better place nationally); 4) Proper assessment and evaluation components are critical to success; 5) We must be able to answer the “Why STEM Question” and come up with innovative and creative approaches to inspiring students’ interest in STEM (excellent examples were provided, i.e. TV shopping example, dangers of hacking IT session, campus transportation system project, etc); 6) National STEM indicators were addressed that focused on demographic shifts, STEM workforce composition, STEM enrollment and Degree Production, cost of higher education in the US, National Report Card, and International comparisons; 7) Story telling is very effective, especially in the Tribal culture; 8) We need enduring partnerships to provide opportunities for the future; 9) Definition of best and brightest needs to be expanded. Talent development is difficult (there is a leakage which deals with students with GPAs in the 2.0 – 2.9 range). We must find a way to get these students ready to be included. In many cases, they have not acquired the skills/ had internships, etc. because you usually have to have a 3.0 GPA or higher to be eligible; 10) We must think outside the box; 11) There are immeasurable numbers of organizations working STEM – we must better share and collaborate. This summit is an excellent step in that direction.
- Some of the challenges for students that were discussed included: 1) Lack of STEM role models; 2) Low expectations from teachers; 3) Family experiences that do not stress parental /family involvement in education; 4) Lack of appropriate interventions; and 5) negative peer pressure. Bottom line – We must Collaborate/Collaborate/Collaborate until all the dots are connected.

### **Lunch Impact Discussions**

Task: Discuss promising practices for recruiting and retaining students:

- 1) Provide authentic experiences (Talking is good, but experience is better);
- 2) Invest in learning resources and tools (Book by Dr. Dan Hamilton helps with learning math easily and provides self assessment tools);
- 3) Don’t stay in the box;

- 4) Explain the “Why STEM” question;
- 5) Develop applets to support teaching/training;
- 6) Bring ideas down to the student’s level (i.e. TV shopping examples where students really understand things like pixels and granularity, but may think they do not know science. Bottom line – they know how to work electronics, but they do not know how electronics work);
- 7) Building talent should be used vs. talent mining;
- 8) We must step back and revisit ideas (work with the Posse Group was mentioned, where 2-3 friends/associates are encouraged to attend college together instead of 1 going alone).
- 9) Experiences and stories change people – not arguments.

### **Concurrent Roundtable Discussions**

- NASA Mission Directorates participated in concurrent roundtables. Each has an education component and each has a designated liaison to the Office of Education. They provide the researchers, content, and much of the funding. Office of Education provides the dissemination of their content.
- Mission Directorate liaisons talked about competitive solicitations and the process for selection. They said they tend to lean towards the Administration’s priorities (i.e. focus on middle schools). Summer of Innovation was one of the programs mentioned.
- Several activities were discussed, specifically projects being done to inspire and encourage students (i.e. Moon Buggy Race, where students get to practice the components of Mechanical Engineering 101; Pre-Service Teachers Institutes that focus on education majors and provide an intensive experience).
- Consensus was that we need more conversations between NASA and other Federal Agencies, Industry, and Academia to determine how to better cooperate and collaborate for innovative solutions to support the STEM workforce of tomorrow.